

## WHAT IS CLAIMED IS:

- 5 1. A syringe for use with an injector having a movement mechanism operably associated therewith, the syringe comprising:  
a body comprising a distal discharge end;  
a plunger movably disposed within the body; and  
at least one agitation element disposed within the body between the plunger and the distal discharge end, the at least one agitation element operable to agitate a fluid in the syringe when the syringe is moved with respect to gravity  
10 by means of the movement mechanism operably associated with the injector.
2. The syringe of Claim 1 wherein the fluid comprises a contrast agent.
- 15 3. The syringe of Claim 2 wherein the contrast agent comprises an ultrasound contrast agent.
4. The syringe of Claim 1 wherein the at least one agitation element has a density different from that of the fluid contained within the syringe.
- 20 5. The syringe of Claim 1 wherein the at least one agitation element comprises a solid.
6. The syringe of Claim 5 wherein the at least one agitation element  
25 has a density greater than that of the fluid in the syringe.
7. The syringe of Claim 1 wherein the at least one agitation element comprises a gas.
- 30 8. The syringe of Claim 1 wherein the movement mechanism operably associated with the injector is operable to move the syringe in one or more of circular, partially circular and linear motions.

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Sub B1

Sub B2

*Sub B2* 9. The syringe of Claim 1 wherein the movement mechanism operably associated with the injector is operable to move the syringe in a rotational motion.

5 10. The syringe of Claim 9 wherein the axis of rotation is variable.

11. The syringe of Claim 1 wherein the at least one agitation element comprises a casing.

10 12. The syringe of Claim 7 wherein the at least one agitation element is surrounded by a cover.

15 13. The syringe of Claim 1, further comprising a recess defined in the body of the syringe, the recess operable to accommodate the at least one agitation element.

14. The syringe of Claim 13 wherein the recess is defined adjacent to the distal discharge end of the syringe.

20 15. The syringe of Claim 1, further comprising a recess defined in the plunger of the syringe, the recess operable to accommodate the at least one agitation element.

*Sub B3* 16. The syringe of Claims 13-15 wherein the recess comprises an annular recess.

25 17. An injector system comprising:  
an injector comprising means for mounting a syringe thereon;  
a syringe comprising a body having a distal discharge end and means  
30 cooperable with the injector means for mounting the syringe on the injector, a plunger movably disposed within the body, and at least one agitation element disposed within the body between the plunger and the distal discharge end; and

a movement mechanism operably associated with the injector, the movement mechanism operable to move the syringe such that the at least one agitation element agitates a fluid contained in the syringe.

5        18. The injector system of Claim 17 wherein the fluid comprises a contrast agent.

19. The injector system of Claim 18 wherein the contrast agent comprises an ultrasound contrast agent.

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20. The injector system of Claim 17 wherein the at least one agitation element has a density different from that of the fluid contained within the syringe.

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21. The injector system of Claim 17 wherein the at least one agitation element comprises a solid.

22. The injector system of Claim 21 wherein the at least one agitation element has a density greater than that of the fluid in the syringe.

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23. The injector system of Claim 17 wherein the at least one agitation element comprises a gas.

24. The injector system of Claim 17 wherein the movement  
25 mechanism moves the syringe in one or more of circular, partially circular and linear motions.

25. The injector system of Claim 17 wherein the movement mechanism moves the syringe in a rotational motion.

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26. The injector system of Claim 25 wherein the axis of rotation is variable.

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27. The injector system of Claim 23 wherein the at least one agitation element is surrounded by a cover.

28. The injector system of Claim 17, further comprising a recess defined in the body of the syringe, the recess operable to accommodate the at least one agitation element.

29. The injector system of Claim 28 wherein the recess is defined adjacent to the distal discharge end of the syringe.

30. The injector system of Claim 17, further comprising a recess defined in the plunger of the syringe, the recess operable to accommodate the at least one agitation element.

31. ~~The injector system of Claims 28-30 wherein the recess comprises an annular recess.~~

32. A method for agitating the contents of a syringe, comprising:  
providing an injector comprising means for mounting a syringe thereon;  
providing a syringe comprising a body having a distal discharge end and means cooperable with the injector means for mounting the syringe on the injector, a plunger movably disposed within the body, and at least one agitation element disposed within the body between the plunger and the distal discharge end;  
providing a movement mechanism operably associated with the injector, the movement mechanism operable to move the syringe such that the at least one agitation element agitates a fluid contained in the syringe;  
activating the movement mechanism to move the syringe; and  
agitating the fluid in the syringe with the at least one agitation element.

33. The method of Claim 32, further comprising the step of deactivating the movement mechanism to terminate the agitation of the syringe contents.

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